SEQUENCE LISTING

<110> AMRAD Operations Pty Ltd

<120> A NOVEL MAMMALIAN GENE, bcl-2, BELONGS TO THE bcl-2 FAMILY OF APOPTOSIS-CONTROLLING GENES

<130> 2096584

<140> 09/155,327
<141> 1997-03-27

<150> PN8965
<151> 1996-03-27

<160> 15

<170> PatentIn Ver. 2.1

<210> 1
<211> 33
<212> DNA
<213> Mouse

<220>
<221> modified_base
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<400> 1
gctctagaac tggggnhgnr tngtngcctt ytt 33

<210> 2
<211> 9
<212> PRT
<213> Mouse

<220>
<221> Unsure
<222> 5
<223> Xaa is Ile or Val

<400> 2

Asn Trp Gly Arg Xaa Val Ala Phe Phe
1 5

<210> 3
<211> 31
<212> DNA
<213> Mouse

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<400> 3
ggaattccca gccnccntkn tcttggatcc a 31

<210> 4
<211> 8
<212> PRT
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<220>
<221> Unsure
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<223> Xaa is Asp or Glu

<220>
<221> Unsure
<222> 5
<223> Xaa is Asn or Gln

<400> 4
Trp Ile Gln Xaa Xaa Gly Gly Trp
1 5

<210> 5
<211> 14
<212> PRT
<213> Mouse

<400> 5
Met Ala Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val
1 5 10

<210> 6

<211> 583
<212> DNA
<213> HUMAN

<220>
<221> CDS
<222> (1)..(579)

<400> 6

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atg gcg acc cca gcc tcg gcc cca gac aca cgg gct ctg gtg gca gac   48
Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
  1               5                  10                  15

ttt gta ggt tat aag ctg agg cag aag ggt tat gtc tgt gga gct ggc   96
Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
             20                  25                  30

ccc ggg gag ggc cca gca gct gac ccg ctg cac caa gcc atg cgg gca   144
Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
         35                  40                  45

gct gga gat gag ttc gag acc cgc ttc cgg cgc acc ttc tct gat ctg   192
Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
     50                  55                  60

gcg gct cag ctg cat gtg acc cca ggc tca gcc cag caa cgc ttc acc   240
Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
 65                  70                  75                  80

cag gtc tcc gac gaa ctt ttt caa ggg ggc ccc aac tgg ggc cgc ctt   288
Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                 85                  90                  95
gta gcc ttc ttt ctc ttt ggg gct gca ctg tgt gct gag agt gtc aac   336
Val Ala Phe Phe Leu Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110
aag gag atg gaa cca ctg gtg gga caa gtg cag gag tgg atg gtg gcc   384
Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala
        115                 120                 125

tac ctg gag acg cgg ctg gtc gac tgg atc cac agc agt ggg ggc tgg   432
Tyr Leu Glu Thr Arg Leu Val Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

gcg gag ttc aca gct cta tac ggg gac ggg gcc ctg gag gag gcg cgg   480
Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg
145                 150                 155                 160

cgt ctg cgg gag ggg aac tgg gca tca gtg agg aca gtg ctg acg ggg   528
Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly
                165                 170                 175

gcc gtg gca ctg ggg gcc ctg gta act gta ggg gcc ttt ttt gct agc   576
Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser
            180                 185                 190

aag tgaa                                                         583
Lys
```

<210> 7

<211> 193
<212> PRT
<213> HUMAN

<400> 7

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Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
  1               5                  10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
             20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
         35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
     50                  55                  60

Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
 65                  70                  75                  80

Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                 85                  90                  95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala
        115                 120                 125

Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg
145                 150                 155                 160

Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly
                165                 170                 175

Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser
            180                 185                 190

Lys
```

<210> 8
<211> 581
<212> DNA
<213> Mouse

<220>
<221> CDS
<222> (1)..(579)

<400> 8

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atg ccg acc cca gcc tca acc cca gac aca cgc gct cta gtg gct gac   48
Met Pro Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val Ala Asp
  1               5                  10                  15
```

```
ttt gta ggc tat agg ctg agg cag aag ggt tat gtc tgt gga gct ggg   96
Phe Val Gly Tyr Arg Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
             20                  25                  30

cct ggg gaa ggc cca gcc gcc gac ccg ctg cac caa gcc atg cgg gct   144
Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
         35                  40                  45

gct gga gac gag ttt gag acc cgt ttc cgc cgc acc ttc tct gac ctg   192
Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
     50                  55                  60

gcc gct cag cta cac gtg acc cca ggc tca gcc cag caa cgc ttc acc   240
Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
 65                  70                  75                  80

cag gtt tcc gac gaa ctt ttc caa ggg ggc cct aac tgg ggc cgt ctt   288
Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95

gtg gca ttc ttt gtc ttt ggg gct gcc ctg tgt gct gag agt gtc aac   336
Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

aaa gaa atg gag cct ttg gtg gga caa gtc cag gat tgg atc gtg gcc   384
Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Asp Trp Ile Val Ala
        115                 120                 125

tac ctg gag aca cgt ctg gct gac tgg atc cac agc agt ggc ggc tgg   432
Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

gcg gac ttc aca gct cta tac ggg gac ggg gcc ctg gag gac gca cgg   480
Ala Asp Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Asp Ala Arg
145                 150                 155                 160

cgt ctg cgg gag ggc aac tgg gca tga gtg agc aca gtg gtg acg ggg   528
Arg Leu Arg Glu Gly Asn Trp Ala Val Ser Thr Val Val Thr Gly Ala
                165                 170                 175

gcc gtg gca ctg ggg gcc ctg gta act gta ggg gcc ttt ttt gct agc   576
Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser Lys
            180                 185                 190

aag tg                                                           581
```

<210> 9
<211> 193
<212> PRT
<213> Mouse

<400> 9

```
Met Ala Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val Ala Asp
  1               5                  10                  15
Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
             20                  25                  30
Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
```

```
          35                  40                  45
Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
      50                  55                  60
Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
 65                  70                  75                  80
Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95
Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110
Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Asp Trp Met Val Ala
        115                 120                 125
Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140
Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg
145                 150                 155                 160
Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly
                165                 170                 175
Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser
            180                 185                 190
Lys
```

<210> 10
<211> 333
<212> PRT
<213> murine

<400> 10

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Met Ala Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val Ala Asp
  1               5                  10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
             20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
         35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
     50                  55                  60

Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
 65                  70                  75                  80

Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Asp Trp Met Val Ala
        115                 120                 125

Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

Glu Leu Glu Ala Ile Lys Ala Arg Val Arg Glu Met Glu Glu Glu Ala
145                 150                 155                 160

Glu Lys Leu Lys Glu Leu Gln Asn Glu Val Glu Lys Gln Met Asn Met
                165                 170                 175
```

```
Ser Pro Pro Pro Gly Asn Ala Gly Pro Val Ile Met Ser Leu Glu Glu
            180                 185                 190

Lys Met Glu Ala Asp Ala Arg Ser Ile Tyr Val Gly Asn Val Asp Tyr
        195                 200                 205

Gly Ala Thr Ala Glu Glu Leu Glu Ala His Phe His Gly Cys Gly Ser
    210                 215                 220

Val Asn Arg Val Thr Ile Leu Cys Asp Lys Phe Ser Gly His Pro Lys
225                 230                 235                 240

Gly Phe Ala Tyr Ile Glu Phe Ser Asp Lys Glu Ser Val Arg Thr Ser
                245                 250                 255

Leu Ala Leu Asp Glu Ser Leu Phe Arg Gly Arg Gln Ile Lys Val Ile
            260                 265                 270

Pro Lys Arg Thr Asn Arg Pro Gly Ile Ser Thr Thr Asp Arg Gly Phe
        275                 280                 285

Pro Arg Ser Arg Tyr Arg Ala Arg Thr Thr Asn Tyr Asn Ser Ser Arg
    290                 295                 300

Ser Arg Phe Tyr Ser Gly Phe Asn Ser Arg Pro Arg Gly Arg Ile Tyr
305                 310                 315                 320

Arg Gly Arg Ala Arg Ala Thr Ser Trp Tyr Ser Pro Tyr
                325                 330
```

<210> 11
<211> 239
<212> PRT
<213> Homo sapiens

<400> 11

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Met Ala His Ala Gly Arg Thr Gly Tyr Asp Asn Arg Glu Ile Val Met
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Lys Tyr Ile His Tyr Lys Leu Ser Gln Arg Gly Tyr Glu Trp Asp Ala
             20                  25                  30

Gly Asp Val Gly Ala Ala Pro Pro Gly Ala Ala Pro Ala Pro Gly Ile
         35                  40                  45

Phe Ser Ser Gln Pro Gly His Thr Pro His Thr Ala Ala Ser Arg Asp
     50                  55                  60

Pro Val Ala Arg Thr Ser Pro Leu Gln Thr Pro Ala Ala Pro Gly Ala
 65                  70                  75                  80

Ala Ala Gly Pro Ala Leu Ser Pro Val Pro Pro Val Val His Leu Thr
                85                  90                  95

Leu Arg Gln Ala Gly Asp Asp Phe Ser Arg Arg Tyr Arg Arg Asp Phe
            100                 105                 110
```

Ala Glu Met Ser Arg Gln Leu His Leu Thr Pro Phe Thr Ala Arg Gly
115 120 125

Arg Phe Ala Thr Val Val Glu Glu Leu Phe Arg Asp Gly Val Asn Trp
130 135 140

Gly Arg Ile Val Ala Phe Phe Glu Phe Gly Gly Val Met Cys Val Glu
145 150 155 160

Ser Val Asn Arg Glu Met Ser Pro Leu Val Asp Asn Ile Ala Leu Trp
165 170 175

Met Thr Glu Tyr Leu Asn Arg His Leu His Thr Trp Ile Gln Asp Asn
180 185 190

Gly Gly Trp Asp Ala Phe Val Glu Leu Tyr Gly Pro Ser Met Arg Pro
195 200 205

Leu Phe Asp Phe Ser Trp Leu Ser Leu Lys Thr Leu Leu Ser Leu Ala
210 215 220

Leu Val Gly Ala Cys Ile Thr Leu Gly Ala Tyr Leu Gly His Lys
225 230 235

<210> 12
<211> 233
<212> PRT
<213> Homo sapiens

<400> 12
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1 5 10 15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
20 25 30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
35 40 45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
50 55 60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65 70 75 80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
85 90 95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
100 105 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
115 120 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
130 135 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln

145 150 155 160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
165 170 175

His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp Asp Thr Phe Val
180 185 190

Glu Leu Tyr Gly Asn Asn Ala Ala Ala Glu Ser Arg Lys Gly Gln Glu
195 200 205

Arg Phe Asn Arg Trp Phe Leu Thr Gly Met Thr Val Ala Gly Val Val
210 215 220

Leu Leu Gly Ser Leu Phe Ser Arg Lys
225 230

<210> 13
<211> 211
<212> PRT
<213> Homo sapiens

<400> 13
Met Ala Ser Gly Gln Gly Pro Gly Pro Pro Arg Gln Glu Cys Gly Glu
1 5 10 15

Pro Ala Leu Pro Ser Ala Ser Glu Glu Gln Val Ala Gln Asp Thr Glu
20 25 30

Glu Val Phe Arg Ser Tyr Val Phe Tyr Arg His Gln Gln Glu Gln Glu
35 40 45

Ala Glu Gly Val Ala Ala Pro Ala Asp Pro Glu Met Val Thr Leu Pro
50 55 60

Leu Gln Pro Ser Ser Thr Met Gly Gln Val Gly Arg Gln Leu Ala Ile
65 70 75 80

Ile Gly Asp Asp Ile Asn Arg Arg Tyr Asp Ser Glu Phe Gln Thr Met
85 90 95

Leu Gln His Leu Gln Pro Thr Ala Glu Asn Ala Tyr Glu Tyr Phe Thr
100 105 110

Lys Ile Ala Thr Ser Leu Phe Glu Ser Gly Ile Asn Trp Gly Arg Val
115 120 125

Val Ala Leu Leu Gly Phe Gly Tyr Arg Leu Ala Leu His Val Tyr Gln
130 135 140

His Gly Leu Thr Gly Phe Leu Gly Gln Val Thr Arg Phe Val Val Asp
145 150 155 160

Phe Met Leu His His Cys Ile Ala Arg Trp Ile Ala Gln Arg Gly Gly
165 170 175

Trp Val Ala Ala Leu Asn Leu Gly Asn Gly Pro Ile Leu Asn Val Leu
180 185 190

```
Val Val Leu Gly Val Val Leu Leu Gly Gln Phe Val Val Arg Arg Phe
        195                 200                 205

Phe Lys Ser
    210
```

<210> 14
<211> 192
<212> PRT
<213> Homo sapiens

<400> 14

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Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser
  1               5                  10                  15

Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Leu Gln Gly Phe Ile Gln
             20                  25                  30

Asp Arg Ala Gly Arg Met Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp
         35                  40                  45

Pro Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys
     50                  55                  60

Arg Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile
 65                  70                  75                  80

Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala
                 85                  90                  95

Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala
            100                 105                 110

Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys
        115                 120                 125

Val Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu
    130                 135                 140

Arg Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Asp Gly
145                 150                 155                 160

Leu Leu Ser Tyr Phe Gly Thr Pro Thr Trp Gln Thr Val Thr Ile Phe
                165                 170                 175

Val Ala Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys Lys Met Gly
            180                 185                 190
```

<210> 15
<211> 137
<212> PRT
<213> Homo sapiens

<400> 15

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Asp Ile Glu Gly Phe Val Val Asp Tyr Phe Thr His Arg Ile Arg Gln
  1               5                  10                  15

Asn Gly Met Glu Trp His Glu Met Met Arg Val Met Gly Thr Ile Phe
            20                  25                  30

Glu Lys Lys His Ala Glu Asn Phe Glu Thr Phe Cys Glu Gln Leu Leu
        35                  40                  45

Ala Val Pro Arg Ile Ser Phe Ser Leu Tyr Gln Asp Val Val Arg Thr
    50                  55                  60

Val Gly Asn Ala Gln Thr Asp Gln Cys Pro Met Ser Tyr Gly Arg Leu
65                  70                  75                  80

Ile Gly Leu Ile Ser Phe Gly Gly Phe Val Ala Ala Lys Met Met Glu
                85                  90                  95

Ser Val Glu Leu Gln Gly Gln Val Arg Asn Leu Phe Val Tyr Thr Ser
            100                 105                 110

Leu Phe Ile Lys Thr Arg Ile Arg Asn Asn Trp Lys Glu His Asn Arg
        115                 120                 125

Ser Trp Asp Asp Phe Met Thr Leu Gly
    130                 135
```